

Amendments to the Specification:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A dual mode device for generating a cross product or a dot product from a first vector and a second vector, the first vector having a first set of components and the second vector having a second set of components, the device comprising:
a dual mode controller receiving the first and second vectors, the dual mode controller being configured to select vector components for evaluating a cross product component or a dot product in response to a first signal, the first signal indicting whether to generate a cross product component or a dot product, wherein the dual mode controller changes the sign of one or more selected vector components when the first signal indicates generation of the cross product component; and
a dual mode unit coupled to receive the selected vector components for generating the gross product component or the dot product in response to the first signal and comprising a plurality of shared logic units that are used to generate the cross product component and the dot product.
2. (Previously presented) The dual mode device as recited in claim 1, wherein the dual mode unit outputs the cross product component when the first signal indicates generation of the cross product component and wherein the dual mode unit outputs the dot product when the first signal indicates generation of the dot product.
3. (Previously presented) The dual mode device as recited in claim 1, wherein the dual mode controller receives a second signal for indicating the cross product component to be generated and selects the vector components for evaluating the cross product component in response to the second signal.
4. (Original) The dual mode device as recited in claim 1, wherein the dual mode controller selects the vector components that are different from the cross product component to be generated when the first signal indicates generation of the cross product component.

5. (Canceled)
6. (Original) The dual mode device as recited in claim 1, wherein the first set of components includes A_x , A_y , and A_z and the second set of components includes B_x , B_y , and B_z , and wherein the dual mode controller selects all components of the first and second sets when the first signal indicates generation of the dot product.
7. (Original) The dual mode device as recited in claim 1, wherein the dual mode unit includes a plurality of multipliers and adders that are arranged to generate the cross product component or the dot product.
8. (Original) The dual mode device as recited in claim 7, wherein the dual mode unit uses at least one multiplier and at least one adder to generate the cross product component or the dot product.
9. (Original) The dual mode device as recited in claim 1, wherein the dual mode controller is configured to select the vector components for evaluating the cross product when the first signal indicates generation of the cross product, wherein the dual mode unit includes a plurality of sub-dual mode units for generating a plurality of cross product vector components, each sub-dual mode unit generating one cross product vector component such that the dual mode unit generates a cross product of the first and second vectors.
10. (Original) The dual mode device as recited in claim 1, wherein the dual mode unit is used in a lighting subsystem that is configured to generate diffuse light, specular light, or spotlight values.
11. (Currently amended) The dual mode device for generating a cross product or a dot product from a first vector and a second vector, the first and second vectors having a plurality of components, the device comprising:

a dual mode controller receiving the first and second vectors, the dual mode controller being configured to select vector components for evaluating a cross product or a dot product

in response to a first signal, the first signal indicating whether to generate a cross product or a dot product, wherein the dual mode controller changes the sign of one or more selected vector components when the first signal indicates generation of the cross product component; and

a plurality of dual mode units coupled to receive the selected vector components for generating the cross product or the dot product in response to the first signal, each dual mode unit generating one cross product vector component of the cross product, the dual mode units generating and outputting the cross product vector components as the cross product when the select signal indicates generation of the cross product component, each dual mode unit comprising a plurality of shared logic units that are used to generate the associated cross product component and the dot product.

12. (Canceled)

13. (Previously presented) The dual mode device as recited in claim 11, wherein the first vector includes components A_x , A_y , and A_z and the second includes components B_x , B_y , and B_z such that the dual mode units generate the cross product by producing cross product components C_x , C_y , and C_z .

14. (Original) The dual mode device as recited in claim 12, wherein one of the dual mode units is selected to generate the dot product of the first and second vectors when the first signal indicates generation of the dot product.

15. (Previously presented) The dual mode device as recited in claim 11, wherein the dual mode units are used in a lighting subsystem that is configured to generate a diffuse light value, a specular light value, and a spotlight value.

16. (Previously presented) The dual mode device as recited in claim 11, wherein each of the dual mode units includes a plurality of multipliers and adders that are arranged to generate the associated cross product component or the dot product.

17. (Previously presented) The dual mode device as recited in claim 16, wherein the dual mode unit uses at least one multiplier and at least one adder to generate the cross product component or the dot product.

18. (Currently amended) In computer system having a graphics subsystem comprising a dual mode device, the dual mode device comprising a dual mode controller and a dual mode unit, a method for generating a cross product or a dot product from a first vector and a second vector, the first vector having a first set of components and the second vector having a second set of components, the method comprising:

receiving the first and second vectors for generating a cross product component or a dot product at the dual mode controller;

receiving the first signal indicating whether to generate a cross product component or a dot product at the dual mode controller;

selecting vector components for evaluating the cross product component or the dot product in response to the first signal;

changing the sign of one or more selected vector components when the first signal indicates generation of the cross product component;

sending the selected vector components to the dual mode unit; and

in response to the first signal and the selected vector components, generating the cross product component when the first signal indicates generation of the dot product, wherein the generating of the cross product component and the dot product is performed using a plurality of shared logic units.

19. (Canceled)

20. (Original) The method as recited in claim 18, wherein a plurality of cross product vector components comprising a cross product vector are generated in parallel.